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SOME FACTORS AFFECTING INDUSTRIAL EDUCATION

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During the past six months the Division of Education of the Sage Foundation has been conducting a series of studies with the object of securing a fact basis for some parts of our thinking and acting with regard to vocational education and vocational guidance. One of our investigations consisted of a study of certain facts concerning all of the thirteen-year-old boys in the public schools of 78 American cities and the fathers of the boys. The total number of cases amounted to 22,027. We chose the thirteen-year-old boys because those are the ones that are in the last year of compulsory school attendance. Soon large numbers of them will leave school to enter money-earning occupations.

Thirteen-year-old boys in each grade from kindergarten through high school.—The first fact that we learned about these boys was that they are scattered through all the grades of the school course from the kindergarten to the last year of the high school.

More significant still, we found that one-half of them were in the sixth grade or below. Since, in general, the children who drop out of school earliest are those who are seriously retarded and are found in the lower grades at relatively advanced ages, this fact is most important. It indicates that large numbers of these boys may be expected to leave school soon and go to work with an educational preparation so inadequate that they cannot enter the ranks of industry with profit either to themselves or to the community.

Another fact brought to light by this part of the investigation was that there is a wide range of conditions in the different cities. In those making the poorest showing, scarcely one in ten of these thirteen-year-old boys was in the seventh grade or above, while in the cities at the other end of the list eight boys out of every ten were within sight of completing the common-school course.

The lesson of these figures is that in many cities the problem of securing a reasonably complete elementary schooling for all the children is far more pressing than that of instituting specialized industrial training. The data show too that, since this has been accomplished by some of the cities, it may be hopefully undertaken by all.

Only one father in six now lives where he was born.—The next set of data secured give the birthplaces of these boys and their fathers. This inquiry showed that only about one father in six is now living in the city of his birth and that among the boys only a few more than one-half are now living where they were born. These facts are significant because it is often urged that the schools should develop courses of industrial education that will directly prepare the children to enter the local industries. But if present conditions maintain in the future, the great majority of adults are not going to work in the same communities in which they received their schooling.

Industries in which the fathers work.—Another portion of the investigation showed for each of the fathers the nature of the trade or business in which he was engaged and also what kind of work he was doing at that trade or business. The occupations of these fathers were studied in the hope that they might furnish an index to the sorts of life work that the young people now in city schools may be expected to go into. A double classification of the data was made first by industries and second by occupations within the industries. The industrial classification was the one adopted by the United States Census Bureau and included the following five main divisions:

- I. Industries of Extraction—Agriculture, Forestry, Mining, etc.
- II. Industries of Transformation—Building Trades, Manufacturing, etc.
- III. Industries of Transportation and Communication—Railroads, Telegraph, etc.
- IV. Industries of Trade—Wholesale and Retail Trade, Real Estate, etc.
- V. Service—Government, Professional, Domestic, Personal, etc.

The tabulation of the returns showed that the fathers were distributed in these five main industrial divisions as follows:

TABLE I
INDUSTRIAL DISTRIBUTION OF FATHERS

Industrial Group	Percentage
Extraction	4
Transformation	52
Transportation	13
Trade	19
Service	12
Total	100

One surprising fact shown by these returns is that only about one-half of these men are found in the industries of transformation which include the building trades and all classes of manufacturing. This is important, because plans for inaugurating systems of vocational education are commonly based on the proposition that a large majority of the young people in our city schools will find their life work in these industries.

Occupations of the fathers.—The occupational classification of these workers was made under six heads, of which the first three relate to occupations primarily manual in nature, while the remaining three groups are primarily mental. The distribution of the fathers in these groups is shown in Table II.

TABLE II
OCCUPATIONAL DISTRIBUTION OF FATHERS

Occupational Group	Percentage
Unskilled laborers	4
Semi-skilled laborers and machine operatives	22
Artisans and industrial foreman	40
Clerks and salesmen	9
Managers, superintendents, and proprietors	21
Professional and financial	4

One-third in headwork, two-thirds in handwork.—Three significant facts are brought to light by the figures in Table II. The first is that more of these men are in professional work than there are engaged in unskilled labor. The second is that the group of managers, superintendents, and proprietors is practically as large

as that made up of semi-skilled laborers. The third is that the mental workers constitute more than one-third of all the workers.

Constant and variable occupations.—The analysis of the data concerning the industries and occupations by which these men earn their livings brought to light the significant fact that there are some occupations which are common to each community and which we may term "constant occupations." Other occupations are found in some localities and not in others, and these we may term "variable occupations." The constant occupations are those which are necessary to maintain the many branches of that enlarged municipal housekeeping which must go on wherever large numbers of people live together in one place. For example, house painting must be carried on in the city where the house is, while paint may be manufactured anywhere. The baking of bread must be carried on by each community, but crackers can be baked somewhere else and brought into the city.

In making our analysis of constant and variable occupations, we enlarged the scope of our inquiry so as to include all of the cities of the United States of more than 50,000 population. We discovered the facts concerning the number of people engaged in each of 140 separate occupations in each one of those cities. As a result, we found that there are 20 constant occupations in which the number of men workers is always at least equal to one for each thousand people in the population. We discovered, for example, that in any city in the United States of 50,000 population, you will always find more than 50 barbers, and that in the average city of that size you will find 150 barbers. It so happens that this is the most constant of all occupations, so that, if anyone knowing these facts had been able to foresee that Gary, Indiana, for example, would be a city of 40,000 population, he would have been able to prophesy ahead of time that the city would employ approximately 120 barbers. These constant occupations with the number of people engaged in them in the average city are shown in Table III.

It is almost certain that if these data were entirely up to date, two, and only two, additional occupations would be included in the list—those of stenographer-typewriter and chauffeur. These occupations include in the aggregate more than half of all the people

engaged in gainful occupations in all of our cities. These facts appear significant. They seem to indicate that if all other conditions are equal, vocational education should give preference to occupations that are everywhere constant over those that are not.

TABLE III

CONSTANT OCCUPATIONS IN CITIES OF 50,000 POPULATION AND OVER

Occupation	Average Number Workers per Thousand Population
<i>Men—</i>	
Bakers	2
Shoemakers	2
Street railway men	3
Plumbers	3
Barbers	3
Masons	4
Blacksmiths	4
Printers	4
Engineers	5
Waiters	6
Bookkeepers	6
Painters	7
Machinists	8
Steam railroad men	11
Carpenters	11
Salesmen	12
Teamsters	12
Clerks	15
Storekeepers	15
Laborers	37
<i>Women—</i>	
Housekeepers	2
Nurses	3
Laundresses	4
Saleswomen	4
Teachers	5
Dressmakers	9
Servants	25

Summary.—The findings that have been so briefly reviewed are preliminary and tentative. It is hoped that the studies now under way will produce results more final and definite in character. Meanwhile we believe that these studies already furnish material which should lead us to proceed with caution in our thinking and acting with respect to vocational education and vocational guidance. We may summarize our findings as follows:

1. A study including 22,027 thirteen-year-old boys in 78 city school systems shows that these boys are scattered through all of the grades of the school course from the kindergarten to the last year of the high school.
2. One-half of the boys are in the sixth grade or below. They need a common-school education more than they need specialized industrial training.
3. In some cities nearly eight of each ten boys were in the seventh grade or above, while in other cities only one boy in ten was in the seventh grade or above. What some cities have accomplished others may hopefully strive for.
4. Only one father in six was born in the city where he now lives, and only a few more than one-half of the boys were born where they now live. This has an important bearing on the proposition that the schools should shape their courses with the predominant aim of preparing the children to enter the local industries.
5. Only about one-half of the fathers are engaged in industries of the building trades and manufacturing.
6. More of the fathers are engaged in the professions than are in unskilled labor.
7. Mental workers constitute more than one-third of all the workers. This fact, and the two preceding ones, indicate the inaccuracy of the common generalization to the effect that only one child in ten in our public schools will find his life work in an intellectual occupation, while the other nine are destined to do hand-work.
8. In American cities of 50,000 population and above there are twenty "constant occupations" in which the number of men workers is everywhere at least equal to one for each thousand in the population, and seven "constant occupations" in which the number of women workers is at least equal to one for each thousand people in the population. Other conditions being equal, vocational education and vocational guidance may well consider favoring "constant occupations" over localized ones.